

**Return on Investment Program Funding Application (FY 2003 Request)**

This is an electronic template. Please enter your responses on this document. Only electronic submittals of this template will be accepted. Proposals submitted after the designated due date may not receive funding consideration.

FINAL AUDIT REQUIRED: The Enterprise Quality Assurance Office of the Information Technology Department is required to perform a final project outcome audit, after implementation, for all Pooled Technology funded projects.

SECTION I: PROPOSALDate: July 12, 2001Agency Name: Iowa Public Television (IPTV)Project Name: Digital Television ConversionExpenditure Name: Transmission System (tower, transmitters, building, antenna, equipment)Agency Manager: Bill HayesAgency Manager Phone Number / E-mail: 515-242-3116 Hayes@iptv.orgExecutive Sponsor (Agency Director or Designee): C. David Bolender**Request For ROI Application Waiver:**

Agencies are required to complete this funding application when requesting funds for any project, any IT expenditure costing over \$100,000, or any non-routine IT expenditure. If you feel there is compelling reason to waive this requirement, please provide (in the box provided below) a brief description of the project or expenditure, the budget amount, and a rationale for the waiver request. Until a decision is made regarding your waiver request, it is not necessary to complete any other portion of this application. The ITD Enterprise Quality Assurance Office will convey waiver request decisions within five working days of receipt.

Explanation:**A. Project or Expenditure Rationale**

Is this project or expenditure necessary for compliance with a Federal standard, initiative, or statute? ☒ **YES** (If "YES," explain) ☐ **NO**

Explanation: The Federal Communications Commission (FCC) has mandated that the entire broadcast industry converts from our present analog transmission standard to a new digital transmission standard. For commercial television stations, this has to be completed by May 1, 2002. For public broadcasters, the conversion must be completed by May 1, 2003. The current system of broadcasting will be maintained through 2006 and perhaps later than 2006.

Is this project or expenditure required by State statute? ☒ **YES** (If "YES," explain) ☐ **NO**

Explanation:

According to the Code of Iowa, Section 256.82 "The Iowa public broadcasting board is created to plan, establish, and operate educational radio and television facilities and other telecommunications services including narrowcast and broadcast systems to serve the educational needs of the state." According to IPTV's tenets,

Iowa Public Television provides public television, telecommunications, and other services that educate, inform and enrich people's lives and

Iowa Public Television manages assets to ensure the greatest possible public accessibility of programs and meet the needs of Iowans regardless of where they live or their ability to pay."

If Iowa Public Television was restricted to providing service to just a portion of the State of Iowa, IPTV could not fulfill its mission as defined in the Code of Iowa or as stated by its own mission statement.

Does this project or expenditure meet a health, safety or security requirement?

☐ YES (If "YES," explain) ☒ NO

Explanation:

Is this project or expenditure necessary for compliance with an enterprise technology standard?

☐ YES (If "YES," explain) ☒ NO

Explanation:

Is this project or expenditure consistent with meeting the goals and objectives of the State's strategic plans?

☒ YES (If "YES," explain) ☐ NO

Explanation: The conversion to digital television will ensure that Iowa Public Television shall continue to work towards the goals of the Vilsack/Pederson Leadership Agenda. Such goals consist of:

"...Education – A quality lifetime, lifelong education system for all Iowans.

Iowa will be a nationally recognized leader in pre-kindergarten learning, emphasizing parents as their children's first and best teachers;

Schools will be well connected with Iowans and their communities; and

Opportunities to pursue post-secondary education and needed workplace skills enhancement will be increased...

...Workforce, Economy, and Agriculture – Iowa will be a world leader in the new economy.

Grow, retain, and recruit a skilled workforce; and

Prepare Iowa's communities for future growth and development...

...Accountable Democracy – The Executive Branch of State Government will be an organization of performance excellence.

Government information and services will be offered when and where it is convenient to Iowans..."

The Governor's Leadership Agenda, Enterprise Planning Team on Education has specified the following goal: "Iowa will improve efficiency and expand the outreach of libraries, museums, arts and other means to provide and promote quality lifelong learning opportunities for all Iowans." "Convert to digital television" is listed as an initiative as part of this goal.

This project will convert IPTV to digital. 100% E in 2003 is a priority of the Governors and of the enterprise.

Is this a “research and development” project or expenditure? ☐ YES (If “YES,” explain) ☒ NO

Explanation:

B. Project or Expenditure Summary

1. Provide a pre-project or pre-expenditure (before implementation) and a post-project or post-expenditure (after implementation) description of the impacted system or process. In particular, note if the project or expenditure makes use of information technology in reengineering traditional government processes.

Response:

Pre:

Iowa Public Television currently broadcasts one signal from its Johnston headquarters to eight transmitters and eight translators across the State. Over one million viewers a week watch our programs.

Post:

Iowa Public Television will deliver either one high definition signal to its audience or four channels of programs. Prime-time broadcasts of high definition programs will have pictures so real you'll feel part of them, presented in wide-screen format with concert hall sound clarity. Digital television will deliver four channels of programs instead of just one. This allows IPTV to then expand into four channels in the daytime - simultaneously providing programs to meet the needs of preschoolers, seniors and lifelong learners - each on their own channel. Interactive learning tools will be delivered right to your television, giving you unlimited educational opportunities and offering students a way to be actively engaged in content.

Television is entering an new era - a time when delivering specific programs and services to specific audiences will be not only possible, but necessary to meet their changing needs and interests. With the advent of digital television, this new way of broadcasting will dramatically change television programming in America.

2. Summarize the extent to which the project or expenditure improves customer service to Iowa citizens or within State government. Included would be such items as improving the quality of life, reducing the government hassle factor, providing enhanced services, improving work processes, etc.

Response:

Iowa Public Television is watched each week by hundreds of thousands of people because it provides services that address the many unique and singular needs of Iowans. Public television delivers programs to people, not eyeballs to advertisers, and that's why it deals with issues commercial program services ignore. This organizational philosophy, mission and practice is why Iowa Public Television is consistently the top rated statewide public television network in the United States.

The advantages of digital television will allow IPTV to greatly expand its services to Iowans.

Expanded Viewing: When programs are not being broadcast in high definition (HDTV), IPTV will be able to transmit four or more channels simultaneously. IPTV plans to use its digital facilities to multicast four separate channels of programming geared toward diverse audiences:

Children's Channel – We THINK KIDS. Next to parents, television is a child's most influential teacher. Our extensive lineup of children's programming demonstrates our commitment to the future and to those who will take us there. To this end we will dedicate an entire channel as a safe place for children filled with pre-school and school aged programming.

Prime Times - programming aimed at addressing the specific and unique interests and concerns of Iowa's senior population.

Lifelong Learning Television - a place for formal instructional programming and repeats of general audience how-to programming.

Iowa Public Affairs Television - a place where citizens can get information about their government through coverage of public affairs issues, events & meetings, and state government and legislative activities.

We are a neighbor, committed to showcasing all that Iowa has to offer. Over 1 million people use our services each week because they see on Iowa Public Television programming that is not available anywhere else.

Expanded Information: Data transmission will allow viewers to get more information from television programs while viewers are watching. For example, during a program a viewer may be given the opportunity to click a button to receive more detailed information (possibly in text format) on the topic being presented. There may be written materials that are related to the video programming, course-related materials, such as teacher and student guides, and selected portions of the Internet or World Wide Web sent directly to the television set without the need for a computer, telephone connections, or an access provider. Enhanced programs such as FRANK LLOYD WRIGHT are being tested now. This will not only enhance the entertainment and educational experience, but also provide great benefits for telecourses and other adult learning opportunities. In addition, educational content for K-12 students can be transmitted in ways that are not possible in the current television system. For example, learning software for K-12 can be transmitted to computers overnight via IPTV's digital broadcast signal.

3. Identify the main project or expenditure stakeholders and summarize the extent to which each, especially citizens, is impacted. In particular, note if the project or expenditure helps reconnect Iowans to State government.

Response:

The main stakeholders in this project are children, educators, adult learners and citizens of the State. As IPTV converts its broadcast channels to digital, it will have an opportunity to televise four different channels where there is now one -- effectively quadrupling the number of public services television signals available to Iowans.

In addition to programming about Iowa, the "Iowa Channel" would incorporate floor coverage of the Iowa General Assembly and other governmental activities. This would make a direct impact on the State's efforts to reconnect Iowans to their government.

Prime Times/A Channel for Seniors would contain education, public service and entertainment programming that responds to the needs of Iowa's elderly, a group whose interests are ignored by conventional media sources.

Children's Channel – We THINK KIDS. Next to parents, television is a child's most influential teacher. Our extensive lineup of children's programming demonstrates our commitment to the future and to those who will take us there. To this end we will dedicate an entire channel as a safe place for children filled with pre-school and school aged programming.

Lifelong Learning Television - a place for formal instructional programming and repeats of general audience how-to programming.

SECTION II: PROJECT ADMINISTRATION

A. Agency Information

1. **Project Executive Sponsor Responsibilities:** The sponsor must have the authority to ensure that adequate resources are available for the entire project, that there is commitment and support for the project, and that the organization will achieve successful project implementation.

Response: No response required.

2. **Organization Skills:**

- a. List the project management skills necessary for successful project implementation
- b. List the project management skills available within the agency
- c. List the source(s) of project management skills lacking within the agency
- d. Summarize relevant agency project management experience and results

Response:

A. Project Management skills necessary: technical expertise, engineering knowledge, time management, budget management, facilitation skills, coordination of simultaneous tasks, purchasing expertise, contract management, and capital campaign management.

B. Project Management skills available within the agency: technical expertise, engineering knowledge, time management, budget management, facilitation skills, coordination of simultaneous tasks, purchasing expertise, contract management, and capital campaign management.

C. Source of project management skills lacking within the agency: Iowa Public Television shall work with engineering firms such as John F.X. Browne and Patlin Engineering for the specialized design skills required in the project. IPTV shall work with the architectural firm KJWW Engineering for the design of the building facilities required at the towers.

Iowa Public Television shall also work with the Purchasing Division of the Department of General Services to acquire the transmitters, antennas, digital equipment, and installation services that shall be acquired during the course of this project. IPTV shall work with the Attorney General's Office to purchase towers and other specialized needs for this project.

D. Relevant agency project management experience and results: Iowa Public Television has a talented, capable and dedicated team of staff members prepared to lead the conversion to digital television. For more than 30 years, IPTV has been a source of original innovative programming about Iowa – programming that educates, enlightens and entertains. IPTV has the technical expertise, organizational skills, and planning skills required for a project of this magnitude.

IPTV established a state-wide network of eight transmitters and eight translators and has maintained that transmission system for over 30 years. 16 years ago a capital campaign was finished and a state-of-the art television facility was completed with the installation of analog equipment which included acquisition, play to air, master control, production, graphics, and edit bay.

The digital conversion project is a digital format for everything that we have done before - this is our industry, our business.

B. Project Information

1. **History:**

- a. Is this project the first part of a future, larger project? If so, please explain.
- b. Is this project a continuation of a previously begun project? If so, please explain project history, current status, and results.

Response:

A. N/A

B. This request is a continuation of our project to convert our facilities to digital. After the FCC mandated that all broadcasters convert to digital, IPTV started the groundwork for the transition to digital television. An engineering study was made at all eight transmitters and an unique solution was identified for each of the eight transmitters across the state. Potential commercial partners were approached -- in several parts of the state, it was IPTV who brought competitors in their market to the same table to discuss solutions to the digital conversion challenge.

IPTV started a DTV symposium as training for its staff. The symposium has become a 2 1/2 day training event open to all broadcast professionals, both technical and non-technical, associated with the transitions to digital television. The nation's top authorities on digital television are featured as key speakers and in panel discussions. Over 300 public and commercial broadcast professionals attend the event free of charge thanks to the 14 sponsors of the symposium.

By the end of fiscal year 2002, IPTV will have 3 digital channels activated with work progressing at several other transmitter sites. KDIN-DT in central Iowa will be completed this fall, followed by KSIN in Sioux City and KRIN in Waterloo. Public/private partnerships were created in all 3 areas. To prepare a site for digital broadcast, towers were purchased, leased or modified. Transmitters, antennas, transmission lines, and other RF components were designed for the specific situation, purchased and must be installed. Buildings for the transmitters and equipment will be built or modified. Much of the tower work and antenna installation is done at 1,000 to 2,000 feet, where weather plays a critical factor. A channel in the Quad Cities has been obtained to ensure coverage in the Eastern part of the State of Iowa, where the digital signal from Iowa City will not be able to reach.

Work at other transmitter sites has begun as well - waiting only the availability of funds for completion.

2. **Expectations:** Describe the primary purpose or reason for the project.

Response: Iowa Public Television has been a leading force in public broadcasting from the very first day of operation. As Iowans, we take pride in this wonderful resource. IPTV is a public-private partnership that illustrates what's best about Iowa. Educational as well as entertaining, the quality of IPTV programs are its most impressive aspect.

The opportunities for IPTV to continue our leadership role in this new century are bright and clear. A vital opportunity is to bring digital television to Iowans and to do so by 2003, in compliance with FCC requirements.

Among the benefits of digital television is the ability to simultaneously broadcast multiple channels of programming. With digital television, IPTV will be able to better meet the diverse viewing needs of residents -- from our seniors to our young children and everyone in between.

3. **Measures:** Describe the criteria that will be used to determine if the project is successful.

Response: To maintain our high quality of broadcast programming, Iowa Public Television has identified the following strategic goals for the five-year period of 2000 – 2004.

TECHNOLOGY

IPTV will design and execute a plan for conversion to digital broadcast format in compliance with FCC requirements. The plan will result in digital television service to all Iowans. IPTV will secure funding necessary for execution of the plan from appropriate sources, including but not limited to the State of Iowa, corporations, foundations and individuals with an interest in IPTV.

EXPANSION OF SERVICES

IPTV will make maximum use of expanded broadcast capability resulting from the conversion to the digital format. Plans will be developed to use the simultaneous, multiple-channel broadcast capabilities of the digital format to broaden program offerings and thereby better meet the educational needs of Iowans. Already the state's largest provider of information and entertainment programming about Iowa, IPTV's role will grow even greater with the expansion of services. Programming will be made available to PBS and will help educate America about Iowa.

PROGRAMMING ENHANCEMENTS

Specifically, consideration will be given to development of expanded broadcast services focusing on the needs of seniors and a special channel providing programming for young children, both groups whose needs often go unmet elsewhere. In addition, IPTV will expand its already considerable commitment to public affairs programming, with special public affairs channels providing Iowans additional information about their governments.

INTERACTIVE PROGRAMS

IPTV will develop or obtain interactive programs to fully realize the benefits of the digital format. These programs will be made available to schools and colleges, not-for-profit organizations and associations and the general population of the state.

Digital television allows great leaps forward in our ability to use television to educate students, to better inform all viewers about areas of their interests, and to expand the opportunities of all Iowans to participate in discussion and debate about issues important to their future.

Iowa Public Television shall be measured:

1. By being on-air by May, 2003.
2. By being able to reach 100% of Iowans in the State through a broadcast signal.
3. By expanding program offerings using the simultaneous, multiple-channel broadcast capabilities of the digital format
4. By enhancing programs to underserved segments of Iowa's population, and
5. By the offering of interactive programs, either developed in house or obtained, to schools and colleges.

4. Environment: List the project participants (i.e. single agency, multiple agencies, State government enterprise, citizens, associations, or businesses, etc.).

Response: The Federal Government has mandated that the entire broadcast industry converts from our present analog transmission standard to a new digital television standard. For commercial television stations, this has to be completed by May 1, 2002. For public broadcasters, the conversion must be completed by May 1, 2003. The current system of broadcasting will be maintained through 2006 and perhaps later than 2006.

Joint private/public partnerships with commercial broadcasters will be made whenever practicable. While these partnerships offer many advantages, they also dictate our schedule for construction. Joint private/public partnerships have been developed in Des Moines, Waterloo and Sioux City. The timing of the digital television funding is critical, because by moving along with our commercial partners and sharing facilities, IPTV will save hundreds of thousands of dollars over the course of the transition to digital television. Another critical component to the construction schedule will be the high demand for tower crews and equipment.

5. Risk: Describe the project risks which may be internal or external to State government, i.e. implementing versus not implementing project, changing technology, potential cost overruns, changing citizen demand or need, etc.

Response:

Risk of not implementing the project: If Iowa Public Television is unable to be on-air with eight digital transmitters by May, 2003, IPTV risks losing the digital licenses for the transmitters which are not on-air. If that were to happen, once the simulcast period is over, IPTV would be unable to transmit any signal in the areas where the digital licenses were lost.

Our Director of Engineering is the project manager for the digital television conversion. IPTV also has two Assistant Directors of Engineering involved in the project. In addition, we have re-assigned duties so that we have a Senior Engineer dedicated solely to this project. He will be responsible for working with vendors and contractors on an on-going basis.

Changing technology: There will be changes in applied technologies, therefore a well-developed plan will include options for accommodating change and will have a scaleable approach. Experts in their field have been contracted with to work with IPTV staff to build transition plans. John F.X. Browne has looked at all eight transmitter sites to determine what solutions would work at each location. The plan includes height of towers, pattern of the antenna signals, and level of power required. Patlin Electronics has developed a base programming transition plan for the Johnston Headquarters. The plan is a four year staged conversion plan that is aggressive but attainable. KJWW Engineering Consultants shall be used to resolve facility issues at each site.

Costs: Prices for headquarter equipment will go down as broadcasters across the make the conversion to digital. To mitigate project risks, we will enter into joint private/public partnerships wherever feasible. We will work with the Purchasing Division of the Dept. of General Services to purchase equipment at the lowest cost possible, while still adhering to State of Iowa policies and procedures. For example, we have sent a bid out for all eight transmitters to be purchased over 3 years, rather than purchasing 1 or 2 transmitters at a time on an as needed basis. Vendors will reduce the cost of an individual transmitter when they are guaranteed a total of 8 transmitters statewide. Additionally, we are working closely with our Assistant Attorney General. He will review all leases and purchase agreements required for this project.

A critical factor in the management of this project is the timely availability of funds. Experience in other states indicates that IPTV needs approximately 18 months to install and test the transmitter equipment. Funds must be available in advance of the 18 months so that IPTV can commit to private/public partnerships and legalities taken care of before the commitment to vendors. IPTV must also be able to commit to vendors on projects that do not involve commercial partners. IPTV also needs funds to assure the federal government that NTIA funds may be matched. Without being able to match, federal dollars may be lost to the State of Iowa for digital conversion.

6. Security / Data Integrity / Data Accuracy / Information Privacy
- List the security requirements of the project
 - Describe how the security requirements will be integrated into the project and tested
 - Describe what measures will be taken to insure data integrity, data accuracy and information privacy.

Response: N/A - Closed loop system. We have talked with Kip Peters, the state's Chief Information Security Officer and he has agreed that "this conversion does not impact enterprise security."

7. Project Schedule

Describe general time lines, resources, tasks, checkpoints, deliverables, responsible parties, etc.

Response:

November, 2000	Final Opportunity to commit to commercial broadcast partners.
November, 2000 - May, 2002	Final 18 month construction cycle for commercial broadcasters. Responsible Party: Commercial broadcasters.
Fall, 2001	KDIN-DT (Des Moines) and KSIN-DT (Sioux City) scheduled to be activated Responsible parties: IPTV, American Tower
May 1, 2002	Commercial broadcasters must be on air. Responsible parties: Various
Spring, 2002	KRIN-DT (Waterloo) scheduled to be activated. Responsible parties: IPTV; KCRG; Spectrasite
May 1, 2003	Public broadcasters must be on air. Responsible parties: Public broadcasters
Spring, 2003	KYIN-DT (Mason City), KBIN-DT (Council Bluffs), KIIN-DT (Iowa City), KTIN-DT (Fort Dodge), and KHIN-DT (Red Oak) must be activated. Responsible parties: IPTV; various partners
Fall, 2004	Finish Johnston headquarters. Responsible parties: IPTV; vendor selected by bid process

SECTION III: TECHNOLOGY (In written detail, describe the following)**A. Current Technology Environment**

1. Software (Client Side / Server Side / Midrange / Mainframe):
 - a. Application software
 - b. Operating system software
 - c. Major interfaces to other systems, both internal and external

Response: N/A

2. Hardware (Client Side / Server Side / Mid-range / Mainframe):
 - a. Platform, operating system
 - b. Storage and physical environment
 - c. Connectivity and bandwidth
 - d. Logical and physical connectivity
 - e. Major interfaces to other systems, both internal and external

Response:

Due to the scope and vast user base that the Iowa Public Television network is designed to serve, it is very difficult to place all of the hardware and software into the categories defined in this section. IPTV's system includes hardware and software necessary for acquiring and creating content, editing content, and broadcasting the content to end users. The hardware does include some computer-based systems such as Avid and Final Cut editing systems. There are video servers involved from Avid and Sony Corporation and some control systems from Grass Valley Group, Sony and Harris Corporation. Our system also includes tower structures throughout the state ranging to heights of 2000 feet as well as transmitters and antennas for broadcasting the signal to the citizens of Iowa.

In each category we will list examples of some of the elements of the system. Then we go into greater detail for the system as a whole.

- A. Platform (operating systems) - Avid (Mac O/S and proprietary), Sony (Unix and proprietary), Dubner (proprietary)
- B. Storage (physical environment) - Sony (Beta, Beta SP, Beta SX, DigiBeta)
- C. Connectivity (bandwidth) - Nortel (DS3), Microwave Radio Corporation (25MHz), Harris Television Transmitters (6mhz - various tv channels - 8 transmitters and 8 translators)
- D. Logical and Physical Connectivity - Fiber, Coax, Microwave, Satellite, Terrestrial Broadcast
- E. N/A

Existing Facilities:

Iowa Public Television has 8 separate high power RF transmitters across the State of Iowa. Each site has a unique situation, requiring a unique solution. Equipment at each site includes tower, transmitter, building, antenna and transmission line, RF components, monitoring equipment and land leases.

At IPTV Johnston's headquarters:

Acquisition: Facilities supporting acquisition of source programming to include: Multiple PBS network and subscription satellite feeds, Fiber Optic feeds; and terrestrial microwave EFP (remote) feeds.

Play to air: Location of multiple videotape machines (various formats) used for preview and playout of promotional announcements (promos), Public Service Announcements (PSA's) and sustaining (long duration) programming. Play-to-Air also provides tape delay and cable head-end program origination.

Master Control: Point of control for manual/automated sequencing, selection and combining of video and audio signals for presentation to a television transmission system.

Production: Control room with video switching and audio mixing equipment to support for producing live/taped television programs. Due to the redundancy of equipment, some on-line post production and program assembly of pre-recorded programs is also possible. Live studio originated programming is the primary function.

Graphics: Defined operational work area and necessary computer assisted hardware for capture and storage of the video image (still store), provide Character Generation titling (topography) with limited animation and modeling capabilities.

Edit Bays: Defined work areas containing high-end computer controlled linear and non-linear videotape editing systems. Non-linear suites support off-line machine-to-machine editing and program viewing.

Technical Support: Location of signal distribution, patching and main frame equipment necessary to support operational control panels throughout the plant. Equipment in this room typically generates most of the heat and noise associated with a television production facility.

Resource Management: System or systems providing coordination of station traffic, event logging, and reconciliation. System interface provides automation of on-line switching and machine control function.

Tertiary Support: Multiple and distinct work areas providing support and connectivity to the Internet, access to Distance Learning, Interactive, Educational Telecommunications and Video/Audio Duplication.

Transmission: Codec technology interface to the statewide fiber network, distributing the television signal to eight separate high-power RF transmitters. Backhaul capabilities include video/audio status and telemetry transmitter control.

Mobile Unit: Mobile units are currently being rented at a cost of over \$100,000 a year to meet the needs of various production events.

B. Proposed Technology Environment

1. Software (Client Side / Server side / Mid-range / Mainframe)
 - a. Application software
 - b. Operating system software
 - c. Major interfaces to other systems, both internal and external
 - d. General parameters if specific parameters are unknown or to be determined

Response: N/A

2. Hardware (Client Side / Server Side / Mid-range / Mainframe)
 - a. Platform, operating system
 - b. Storage and physical environment
 - c. Connectivity and Bandwidth
 - d. Logical and physical connectivity
 - e. Major interfaces to other systems, both internal and external
 - f. General parameters if specific parameters are unknown or to be determined

Response: Due to the scope and vast user base that the Iowa Public Television network is designed to serve, it is very difficult to place all of the hardware and software into the categories defined in this section. IPTV's system includes hardware and software necessary for acquiring and creating content, editing content, and broadcasting the content to end users. The hardware does include some computer-based systems such as Avid and Final Cut editing systems. There are video servers involved from Avid and Sony Corporation and some control systems from Grass Valley Group, Sony and Harris Corporation. Our system also includes tower structures throughout the state ranging to heights of 2000 feet as well as transmitters and antennas for broadcasting the signal to the citizens of Iowa.

In each category we will list examples of some of the elements of the system. Then we go into greater detail for the system as a whole.

- A. Platform (operating systems) - Avid (Mac O/S and proprietary), Sony (Unix and proprietary), Final Cut Pro (Mac O/S and proprietary), Dubner (proprietary)
- B. Storage (physical environment) - Sony (Beta, Beta SP, Beta SX, DigiBeta, HDCAM, DVCAM, Hard disk array) - Avid (hard disk array)
- C. Connectivity (bandwidth) - Nortel (DS3), Microwave Radio Corporation (25MHz), Harris Television Transmitters (6mhz - various tv channels - 16 transmitters and 8 translators)
- D. Logical and Physical Connectivity - Fiber, Coax, Microwave, Satellite, Terrestrial Broadcast
- E. N/A

Existing Facilities:

Iowa Public Television shall have 16 separate high power RF transmitters across the State of Iowa for the length of the time that IPTV will be required to transmit both the analog and digital signals. At the end of simulcasting, IPTV shall go back to 8 RF transmitters capable of transmitting digital signals.

At IPTV Johnston's headquarters:

Acquisition: Facilities supporting acquisition of source programming to include: Multiple PBS network and subscription satellite feeds, Fiber Optic feeds; and terrestrial microwave EFP (remote) feeds. System also enables data (bit rate) extraction, ATSC decoding and High Definition to Standard Definition conversion necessary for simulcasting.

Play to air: Location of multiple videotape machines (various formats) and multiple servers used for preview and play to air promotional, commercial (PSA) spot insertion and sustaining material. Also provides tape/server delay and cable head-end program origination.

Master Control: Point of control for manual/automated sequencing, selection and combining of video and audio signals for presentation to a television transmission system. New equipment allows 1.5Gb/s true HD switching and branding, 360 MB/s SDI processing of the NTSC signal and the capability for the fourth and final ATSC Standard Definition multicasting channel, with branding.

Production: Control room with video switching and audio mixing equipment necessary for producing live/taped television programs. Due to the redundancy of equipment, some on-line post production and program assembly of pre-recorded programs is also possible. Live studio originated programming is the primary function. Closed captioning for the 1.5Gb/s data stream.

Graphics: Defined operational work area and necessary computer assisted hardware to capture and store video images (still store), provide Character Generation titling (topography) with limited animation and modeling capabilities. New equipment will provide full digital processing with presentation in 16:9 and/or 4:3 aspect ratios.

Edit Bays: Defined work areas containing high-end computer controlled linear and non-linear videotape editing systems. Non-linear suites support off-line machine-to-machine editing and program viewing.

Technical Support: Location of signal distribution, patching and main frame equipment necessary to support operational control panels throughout the plant. Equipment in this room typically generates most of the heat and noise associated with a television production facility.

Resource Management: System or systems providing coordination of station traffic, event logging, and reconciliation. System supports local origination of Program and System Identification Protocol (PSIP) data stream, in addition, interfaces provide automation of on-line switching and machine control functions.

Tertiary Support: Multiple and distinct work areas providing support and connectivity to the Internet, access to Distance Learning, Interactive, Educational Telecommunications and Video/Audio Duplication.

Transmission: Codec technology interface to the statewide fiber network, distributing the television signal to eight separate high-power RF transmitters. Backhaul capabilities include video/audio status and telemetry transmitter control. New equipment supports simultaneous transport of NTSC and 19.39Mb/s SDI signals.

Mobile Unit: Four camera mobile unit with digital uplink and conversion capabilities for HDTV origination.

C. Data Elements

If the project creates a new database, provide a description of the data elements.

Response: N/A

SECTION IV: Financial Analysis

A. Budget: Enter figures and calculate (see formula below) Total Annual Prorated Cost (State Share).

$$\left[\left(\frac{\text{Budget Amount}}{\text{Useful Life}} \right) \times \% \text{ State Share} \right] + (\text{Annual Ongoing Cost} \times \% \text{ State Share}) = \text{Annual Prorated Cost}$$

Budget Line Items	Budget Amount (1 st Year Cost)	Useful Life (Years)	% State Share	Annual Ongoing Cost (After 1 st Year)	% State Share	Annual Prorated Cost
Agency Staff	\$	1	%	\$	%	\$
Software	\$	4	%	\$	%	\$
Hardware	\$	3	%	\$	%	\$
Training	\$	4	%	\$	%	\$
Facilities	\$	1	%	\$	%	\$
Professional Services	\$218,825	15	100%	\$	%	\$14,588
ITD Services	\$	4	%	\$	%	\$
Supplies, Maint, etc.	\$	1	%	\$350,000	%	\$350,000
Other (Specify) towers, transmitters, digital equipment	\$21,400,000	15	100%	\$	%	\$1,426,666
Totals	\$21618825	-----	-----	\$350,000	-----	\$1791254

Transfer this amount to the ROI Financial Worksheet, item “D” on page 24.

B. Funding: Enter data or provide response as requested

1. This is (pick one): ☒ A Pooled Technology Fund or Reengineering Fund Request
☐ An Agency IT Expenditure or Budget Request (General Fund, Road Funds, etc)
☐ Other – Specify:

2. On a fiscal year basis, enter the estimated cost by funding source?

	FY03		FY04		FY05	
	Cost (\$)	% Total Cost	Cost (\$)	% Total Cost	Cost (\$)	% Total Cost
State General Fund	\$	%	\$	%	\$	%
Pooled Tech. Fund	\$21618825	100%	\$	%	\$	%
Federal Funds	\$	%	\$3,670,457	100%	\$	%
Local Gov. Funds	\$	%	\$	%	\$	%
Grant or Private Funds	\$	%	\$	%	\$6,000,000	100%
Other Funds (Specify)	\$0	%	\$	%	\$	%
Total Project Cost	\$21618825	100%	\$3,670,457	100%	\$6,000,000	100%

If applicable, summarize prior fiscal year funding experience for the project / expenditure.

Response: Total project is expected to be \$42,676,000. Funding already received:

FY 1999 State Appropriation \$2,000,000
FY 2000 State Appropriation \$5,000,000
FY 2001 Information Technology \$1,488,818
FY 2001 Federal Funds \$ 498,757
FY 2002 State Appropriation \$2,400,000

Iowa Public Television continues to ask for federal funds from the Dept of Commerce. A capital campaign for grant and private funds is currently under consideration.

1. On a fiscal year basis, how much of the total (\$ amount and %) project / expenditure cost would be absorbed by your agency from normal operating budgets (all funding sources)?

Response: None

2. Identify, list, and quantify all new annual ongoing (maintenance, staffing, etc.) related costs (State \$s) that will be incurred after implementation or expenditure.

Response: Utilities and maintenance costs of \$350,000. We anticipate increased costs due to the multicast potential of DTV. We will mitigate some of those costs through repurposing content and creating content by designing the content for more than one use. The additional programming costs are not known at this time.

C. ROI Financial Worksheet: Respond to the following and transfer data to the ROI Financial Worksheet (see IVC11) as necessary:

1. Annual Pre-Project Cost – Quantify all actual state government direct and indirect costs (personnel, support, equipment, etc.) associated with the activity, system or process prior to project implementation. This section should be completed only if state government operations costs are expected to be reduced as a result of project implementation.

Response: N/A

2. Annual Post-Project Cost – Quantify all estimated State government direct and indirect costs associated with activity, system or process after project implementation. This section should be completed only if State government operations costs are expected to be reduced as a result of project implementation.

Response: N/A

3. State Government Benefit -- Subtract the total “Annual Post-Project Cost” from the total “Annual Pre-Project Cost.” This section should be completed only if State government operations costs are expected to be reduced as a result of project implementation.

Response: N/A

4. Citizen Benefit – Quantify the estimated annual value of the project to Iowa citizens. This includes the “hard cost” value of avoiding expenses (“hidden taxes”) related to conducting business with State government. These expenses may be of a personal or business nature. They could be related to transportation, the time expended on or waiting for the manual processing of governmental paperwork such as licenses or applications, taking time off work, mailing, or other similar expenses. As a “rule of thumb,” use a value of \$10 per hour for citizen time savings and \$.325 per mile for travel cost savings.

Response: \$6,391,213

If IPTV is unable to be on-air with eight digital transmitters by May, 2003, IPTV risks losing the digital licenses for the transmitters which are not on-air. If that were to happen, once the simulcast period is over, IPTV would be unable to transmit any signal in the areas where the digital licenses were lost. This would place at risk the benefit the citizens of the State of Iowa receive from the services provided by IPTV. Through their contributions, viewers and supporters tell us they value the services they receive. In FY 2000 alone, the following amounts were given:

Contributions to Friends of Iowa Public Television	\$5,042,230
Contribution to the Iowa Public Television Foundation	\$ 159,891
Underwriting	\$1,189,092

5. Opportunity Value/Risk or Loss Avoidance Benefit – Quantify the estimated annual non-operations benefit to State government. This could include such items as qualifying for additional matching funds, avoiding the loss of matching funds, avoiding program penalties/sanctions or interest charges, avoiding risks to health/security/safety, avoiding the consequences of not complying with State or federal laws, providing enhanced services, avoiding the consequences of not complying with enterprise technology standards, etc.

Response: \$28,369,250

If IPTV does not maintain full service we would risk losing matching funds from the Corporation for Public Broadcasting (\$1,455,000) and NTIA federal funds in a match (\$3,670,000). Without available digital television funding to us now, we are losing opportunities to work with local commercial broadcasters at the various transmitter sites across the state. Estimated savings potentially lost with are Mason City project is \$2,500,000. Absent our service, IPTV would not have received a Star Schools grant of \$6,102,000 or a Carver Grant of \$688,000.

For many of our viewers, our service is priceless and a dollar amount can not be placed on the value of these services. For the purposes of calculating a ROI, we have estimated a value of some of the services most used by our viewers and constituents. The value of our prime time programming in the Des Moines/Ames market only, based upon the commercial world business model is \$10,347,750. For a valuation of IPTV's prime-time programming services state-wide, we would need to research the amount the commercial stations charge in IPTV's remaining seven markets. IPTV is the most efficient distribution system for educational video for schools in the State of Iowa. Estimated yearly savings in distribution costs is \$580,500. The cost benefit analysis of our Ready to Learn services comes to \$1,680,000. The market value of the technical assistance provided to K012 schools is \$291,000. The savings to schools as a result of real time field trips for FY 1999 as reported to the Iowa Legislature is \$1,055,000.

6. Total Annual Project Benefit -- Add the values of all annual benefit categories.

Response: \$34,760,463

7. Total Annual Project Cost – It is necessary to estimate and assign a useful life figure to each cost identified in the project budget. Useful life is the amount of time that project related equipment, products, or services are utilized before they are updated or replaced. In general, the useful life of hardware is three (3) years and the useful life of software is four (4) years. Depending upon the nature of the expense, the useful life for other project costs will vary between one (1) and four (4) years. On an exception basis, the useful life of individual project elements or the project as a whole may exceed four (4) years. Additionally, the ROI calculation must include all new annual ongoing costs that are project related. Completing Section IV-A, Project Budget of the evaluation document will provide all the necessary information for this item.

Response: \$1,791,254

8. Benefit / Cost Ratio_– Divide the “Total Annual Project Benefit” by the “Total Annual Project Cost.” If the resulting figure is greater than one (1.00), then the annual project benefits exceed the annual project cost. If the resulting figure is less than one (1.00), then the annual project benefits are less than the annual project cost.

Response: 19.40

9. ROI -- Subtract the “Total Annual Project Cost” from the “Total Annual Project Benefit” and divide by the amount of the requested State IT project funds.

Response: 1.525

10. Benefits Not Readily Quantifiable -- List the project benefits which are not readily quantifiable (i.e. IT innovation, unique system application, utilization of new technology, hidden taxes, improving the quality of life, reducing the government hassle factor, meeting a strategic goal,

etc.). Rate the importance of these benefits on a “1 – 10” basis, with “10” being of highest importance. Check the “Benefits Not Readily Quantifiable” box in the applicable row.

Response: Since it began, Iowa Public Television has been what public television is supposed to be – the place to which we’ve turned for educational, enlightening and entertaining programs free of political influence or commercial consideration. Every day it opens a window to our world. It offers each of us – regardless of where we live or what we can afford to pay – a chance to learn from the lives of others. It is our neighbor, our teacher, our partner, our friend.

At Iowa Public Television, we THINK KIDS! We always have. We take our responsibilities seriously because we know that, next to parents, television programs are a child’s most influential teacher. Our extensive children’s programming services underscore our commitment to the future and to those who will take us there. Our children’s programs focus on goals and values, not guns and violence. And kids love what we do. Over 300,000 watch us every week. Barney and Big Bird and Arthur and Wishbone are more than children’s companions, they are members of their families and partners in their creative quests. In so many ways, we are a critical educational enterprise – an educational powerhouse of video and online resources, interactive media, videoconferencing, distance learning, and staff development opportunities for learners of all ages.

The level of our commitment mirrors the reach of the signals from our eight transmitters. Iowa Public Television is statewide in fact, not just in name. Our programs reflect Iowa issues and respond to Iowa needs. A million people watch Iowa Public Television each week, viewing programs they cannot find anywhere else. We make programs that matter – about our state, its people, about what it means to be an Iowan living in today’s times or yesterdays.

Perhaps it is because we serve people – not deliver audiences to advertisers – that IPTV holds such a special place in the lives of many Iowans. And because our programs do serve people, our programs can often make a difference in their lives. One of many is Joel Windsor of Waterloo. When he was 15, he was in an auto accident, in a coma for two-and-a-half months, and his doctors said he’d never read or write again. Surely his doctors had never met Big Bird or Fred Rogers. Joel watched Sesame Street, learned his ABCs and how to count. Mister Rogers taught him social skills. Joel graduated from Marshalltown High School and attended Iowa Lakes Community College.

Clearly, our programs do make a difference. They do what E.B. White challenged them to do thirty years ago at their birth. They address themselves to excellence, not acceptability. That’s why so many Iowans have supported us from the start, when we were just an idea, with a single transmitter, our studios on the back stage of central Iowa’s technical high school, with only a handful of volunteers to help. Today, our statewide broadcast schedule originates from state-of-the-art- television facilities – the result of continued support from the state and federal governments, corporations, foundations, Iowa’s business, industry, trade unions and interest groups and over 80,000 volunteer members of Friends of Iowa Public Television.

Soon, Iowa Public Television will have an opportunity to serve even more: to provide special new program channels aimed at meeting the unique needs of all Iowans; to create interactive educational initiatives for use in schools throughout our state; to broadcast programs with movie-theater-quality pictures and sound. All of that, and more, will happen with the advent of digital television – a new way of broadcasting that will dramatically change television programming in America and provide expanded opportunities for anyone who views it. This change will be even more dramatic than when the movies added sound or when radio added pictures.

Imagine this:

Four channels of public television programming where there is only one. All coming into your home simultaneously over the airwaves, the same way that one channel does now. No need for special cables or satellite dishes. This is free, over-the-air broadcasting, available to everyone.

Pictures so real you’ll feel a part of them, presented in wide-screen on your television set; sound with concert hall clarity, in Dolby stereo surround.

Interactive teaching tools right on your television set, giving you unlimited learning opportunities in your home and at your business, available at your convenience, whenever you want to take advantage of them. That’s the world of digital television.

Throughout the day, we’ll be using the big bandwidth of the digital television signal to transmit data and interactive educational applications. This material will reflect the ever-growing need to provide students with the ability to learn what’s important in ways in which they can best understand it. Research shows us that learning happens when students’ minds are actively engaged in the content. These tools will also provide lifelong learning opportunities to support Iowa’s workforce in maintaining a competitive and vital economic environment in our state.

This digital television environment brings with it unparalleled opportunities – and unparalleled challenges. Iowa Public Television embraces both, fully prepared to meet the challenges and provide the opportunities. That’s what we have always done. That’s what Iowans do. Iowa Public Television, after all, is about Iowa. And if we don’t do it – and do it together – who will?

11. ROI Financial Worksheet

Annual Pre-Project Cost - How You Perform The Function(s) Now

FTE Cost (salary plus benefits):	\$
Support Cost (i.e. office supplies, telephone, pagers, travel, etc.):	\$
Other Cost (expense items other than FTEs & support costs, i.e. indirect costs if applicable, etc.):	\$
A. Total Annual Pre-Project Cost:	\$

Annual Post-Project Cost – How You Propose to Perform the Function(s)

FTE Cost:	\$
Support Cost (i.e. office supplies, telephone, pagers, travel, etc.):	\$
Other Cost (expense items other than FTEs & support costs, i.e. indirect costs if applicable, etc.):	\$
B. Total Annual Post-Project Cost:	\$
State Government Benefit (= A-B):	\$

Annual Benefit Summary

State Government Benefit:	\$
Citizen Benefit:	\$6,391,213
Opportunity Value or Risk/Loss Avoidance Benefit:	\$28369250
C. Total Annual Project Benefit:	\$34760463
D. Annual Prorated Cost (SECTION IV-A):	\$1791254
Benefit / Cost Ratio: (C / D) =	19.4
Return On Investment (ROI): (C – D / Requested Project Funds) x 100 =	152.5%

☒ **Benefits Not Readily Quantifiable**

Section V: ITC Project Evaluation Criteria

Criteria and Location in Project Evaluation Document		Points
1.	Is the project a statutory requirement; legal requirement; federal or state mandate; health, safety or security requirement or issue; and/or required for compliance with the enterprise technology standards? Location: Section I-A	15
2.	Will the project improve customer service? Location: Section I-B.2	15
3.	Does the project have a direct impact on citizens? To what extent does the project help reconnect state government with lowans? Location: Section I-B.3	10
4.	Does the project provide a sufficient tangible and/or intangible return on investment? Will it generate savings or income? Location: Section IV-C	10
5.	Does the project make use of information technology and its practical application in reengineering traditional government processes consistent with the goals and objectives of the state's strategic plans? Location: Section I-B.1	10
6.	Risk: What are the risks associated with the project? Such risks may include those internal and external to state government, the risk of doing a project, the risk of not doing a project, and the risks associated with changing technologies, potential cost overruns, and changing citizen demands and needs. Location: Section II-B.5	10
7.	Is this funding required to continue a project that was begun prior to the year funding is being requested for and does it have proven past performance? Is the funding part of a multi-year strategy? Location: Section II-B1, IVB2	10
8.	Will the project be for only one agency, multiple agencies, or the state government enterprise? Location: Section I-B3, IIB4	10
9.	Has the applicant maximized their own and other resources in the project? Is alternative funding unavailable for this project? (If no other funding available, project will not be completed without Pooled Technology funding) Location: Section IV-B.2, IV-B.3	5
10.	What is the credibility of the requester based on past performance on other projects? Location: Section II-A.2.d	5
Total		100